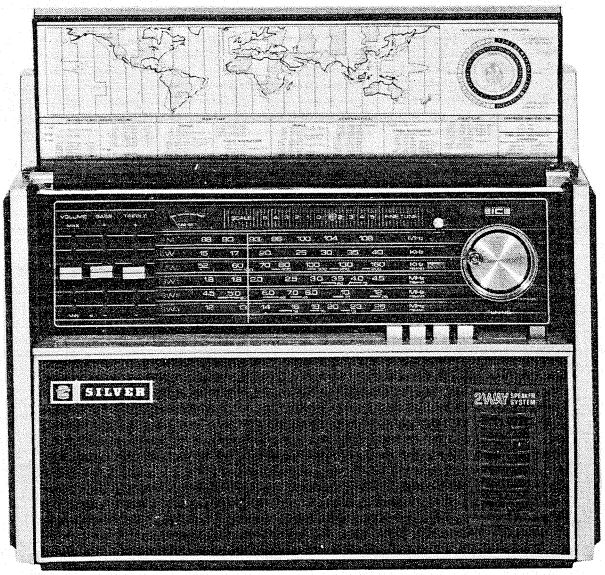
SERVICE MANUAL
SILVER

MODEL XF900
(REVISION)



SPECIFICATIONS

TUNING RANGE

FM	88 ~ 108 MHz
LW	150 ~ 400 KHz
MW	520 ~ 1605 KHz
SW1	1.6 ~ 4.5 MHz
SW2	4.5 ~ 12 MHz
SW3	12 ~ 26.1 MHz

INTERMEDIATE FREQUENCY

FM	10.7 MHz
LW, MW, SW1, SW2, SW3	455 KHz

AUDIO OUTPUT

Maximum	1,500 mW
Undistorted	1,200 mW

SPEAKER

12 X 19 cm (5" X 7") 6 ohms, and 5 cm(2") 6 ohms PM dynamic speakers

POWER SUPPLY

AC110 ~ 130, 220 ~ 240 volts 50/60 Hz or 6 each 1½ volts flashlight batteries "D" cell (UM-1 X 6)

DIMENSIONS

380mm (W) X 250mm (H) X 140mm (D)
15" (W) X 9⅞" (H) X 5½" (D)

WEIGHT

7.06 kg (15.6 l.b.s.) (with Batteries)

TRANSISTOR COMPLEMENT

FM/AM IF & AUDIO SECTION

Q1,2,3	2SC460(C)	1st, 2nd, 3rd FM IF Amp. (NPN)
Q4,5	2SC460(B)	1st, 2nd AM IF Amp. (NPN)
Q6	2SC1345(D)	Audio Amp. (NPN)
IC1	HA1314	(Integrated Circuit) Audio Power Output

FM TUNER SECTION

Q101	2SC535(B)	FM RF Amp. (NPN)
Q102,103	2SC461(C)	FM MIX., FM OSC (NPN)

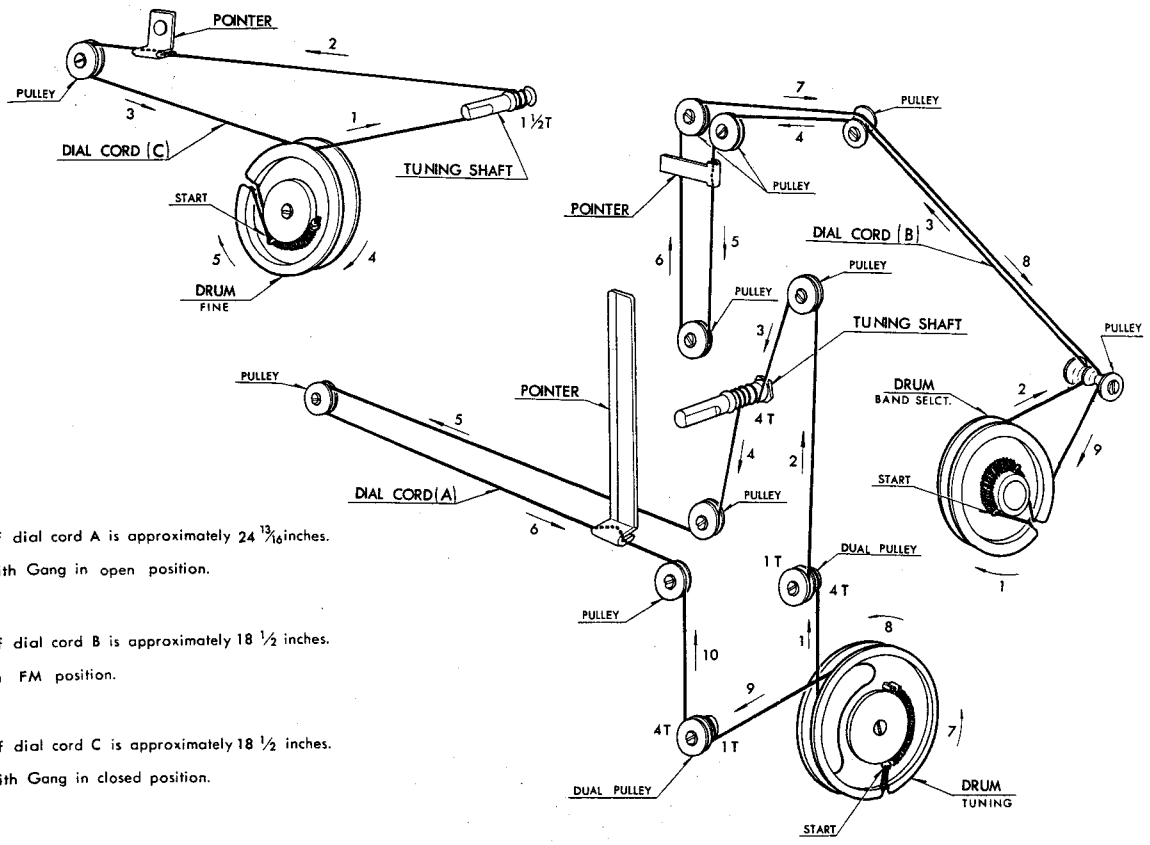
AM TUNER SECTION

Q201,202	2SC460(B)	AM MIX., AM OSC (NPN)

CHASSIS REMOVAL

1. Remove Tuning, Fine Tuning, Volume, Bass, Treble, Band Selector Knobs.
2. Push button (D. Light, VU, Phono, AFC, Power) to "ON" position.
3. Remove batteries from the battery compartment.
4. Remove the two cabinet back mounting screws and remove the cabinet back.
5. Remove the three screws for protector board in battery compartment and remove the protector board.
6. Disconnect lead wires for ferrite bar antenna, pilot lamps, speakers and telescopic antenna.
7. Remove 4 pcs. of chassis mounting screws and then take out the chassis pulling it toward cabinet bottom.

DIAL CORD STRINGING



Overall length of dial cord A is approximately 24 $^{13}/_{16}$ inches.
Start stringing with Gang in open position.

Overall length of dial cord B is approximately 18 ½ inches.
Start stringing in FM position.

Overall length of dial cord C is approximately 18 ½ inches.
Start stringing with Gang in closed position.

ALIGNMENT

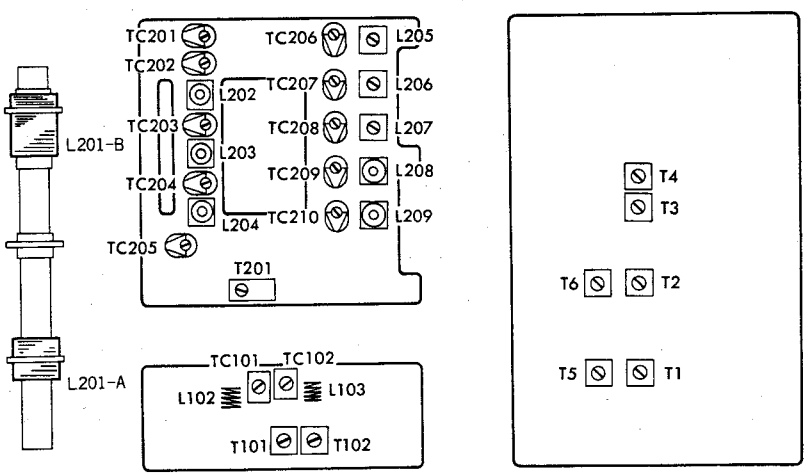
Equipment Required
1. RF Signal Generator
2. Electronic Voltmeter V.T.V.M.

General
1. Signal input must be as low as possible to avoid overload and clipping. (Use highest sensitivity of output indicator)
2. Standard modulation is 400 Hz at 30% amplitude.
3. Connect A.C.V.T.V.M. across EAR. Jack.
4. Fine tuning at mechanical center.

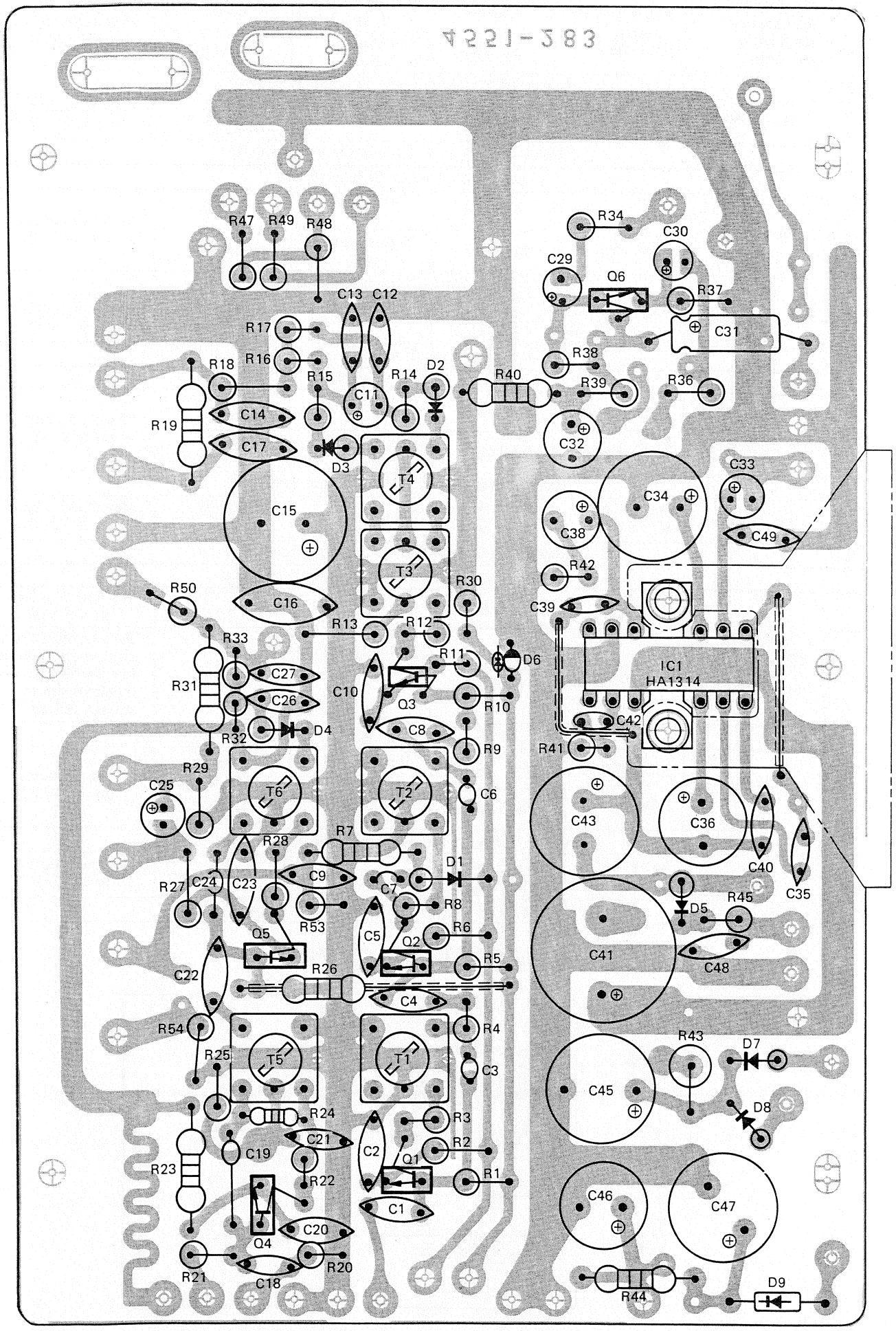
Step	Connect Signal Source To-	Connect Output Indicator To-	Set Signal Generator To-	Set Radio Dial To-	Adjust-	Adjust For-	Step
Set Band Selector Switch to MW							
1	Loop of several turns of wire connected across gen. leads. Place loop close to the AM antenna.	A.C.V.T.V.M. across EAR. Jack	455 KHz	Tuning gang closed	T201 T5 T6	Maximum output on V.T.V.M.	1
2			505 KHz	Tuning gang closed	L206		2
3			1680 KHz	Tuning gang open	TC207		3
4	Repeat Steps 2 and 3 for optimum sensitivity						4
5	Same as above	A.C.V.T.V.M. across EAR. Jack	600 KHz	Tune for signal	L201–B	Maximum output on V.T.V.M.	5
6			1400 KHz		TC202		6
7	Repeat Steps 5 and 6 for optimum sensitivity						7
Set Band Selector Switch to LW							
1	Same as above	A.C.V.T.V.M. across EAR. Jack	145 KHz	Tuning gang closed	L205	Maximum output on V.T.V.M.	1
2			415 KHz	Tuning gang open	TC206		2
3	Repeat Steps 1 and 2 for optimum sensitivity						3
4	Same as above	A.C.V.T.V.M. across EAR. Jack	180 KHz	Tune for signal	L201–A	Maximum output on V.T.V.M.	4
5			380 KHz		TC201		5
6	Repeat Steps 4 and 5 for optimum sensitivity						6

	Set Band Selector Switch to SW1						
1	Place gen. lead across telescopic antenna	A.C.V.T.V.M. across EAR. Jack	1.52MHz	Tuning gang closed	L207	Maximum output on V.T.V.M.	1
2			4.7 MHz	Tuning gang open	TC208		2
3	Repeat Steps 1 and 2 for optimum sensitivity						3
4	Same as above	A.C.V.T.V.M. across EAR. Jack	2 MHz	Tune for signal	L202	Maximum output on V.T.V.M.	4
5			4 MHz		TC203		5
6	Repeat Steps 4 and 5 for optimum sensitivity						6
	Set Band Selector Switch to SW2						
1	Same as above	A.C.V.T.V.M. across EAR. Jack	4.28MHz	Tuning gang closed	L208	Maximum output on V.T.V.M.	1
2			12.5MHz	Tuning gang open	TC209		2
3	Repeat Steps 1 and 2 for optimum sensitivity						3
4	Same as above	A.C.V.T.V.M. across EAR. Jack	5 MHz	Tune for signal	L203	Maximum output on V.T.V.M.	4
5			12 MHz		TC204		5
6	Repeat Steps 4 and 5 for optimum sensitivity						6
	Set Band Selector Switch to SW3						
1	Same as above	A.C.V.T.V.M. across EAR. Jack	11.7 MHz	Tuning gang closed	L209	Maximum output on V.T.V.M.	1
2			27.2 MHz	Tuning gang open	TC210		2
3	Repeat Steps 1 and 2 for optimum sensitivity						3
4	Same as above	A.C.V.T.V.M. across EAR. Jack	14 MHz	Tune for signal	L204	Maximum output on V.T.V.M.	4
5			26 MHz		TC205		5
6	Repeat Steps 4 and 5 for optimum sensitivity						6
	Set Band Selector Switch to FM (IF Alignment)						
1	Place gen. leads across FM antenna terminal	A.C.V.T.V.M. across EAR. Jack	10.7 MHz	Tuning gang closed	T101 T102 T1 T2 T3	Maximum output on V.T.V.M.	1
2		DC probe across C14	10.7 MHz (Unmod.)		T4	Zero reading, a positive or negative reading will be obtained on either side of correct setting.	2
3	Repeat Steps 1 and 2 for optimum sensitivity						3
4	Same as above	A.C.V.T.V.M. across EAR. Jack	87 MHz	Tuning gang closed	L103	Maximum output on V.T.V.M.	4
5			109.5 MHz	Tuning gang open	TC102		5
6	Repeat Steps 4 and 5 for optimum sensitivity						6
7	Same as above	A.C.V.T.V.M. across EAR. Jack	88 MHz	Tune for signal	L102	Maximum output on V.T.V.M.	7
8			108 MHz		TC101		8
9	Repeat Steps 7 and 8 for optimum sensitivity						9

ALIGNMENT LAYOUT

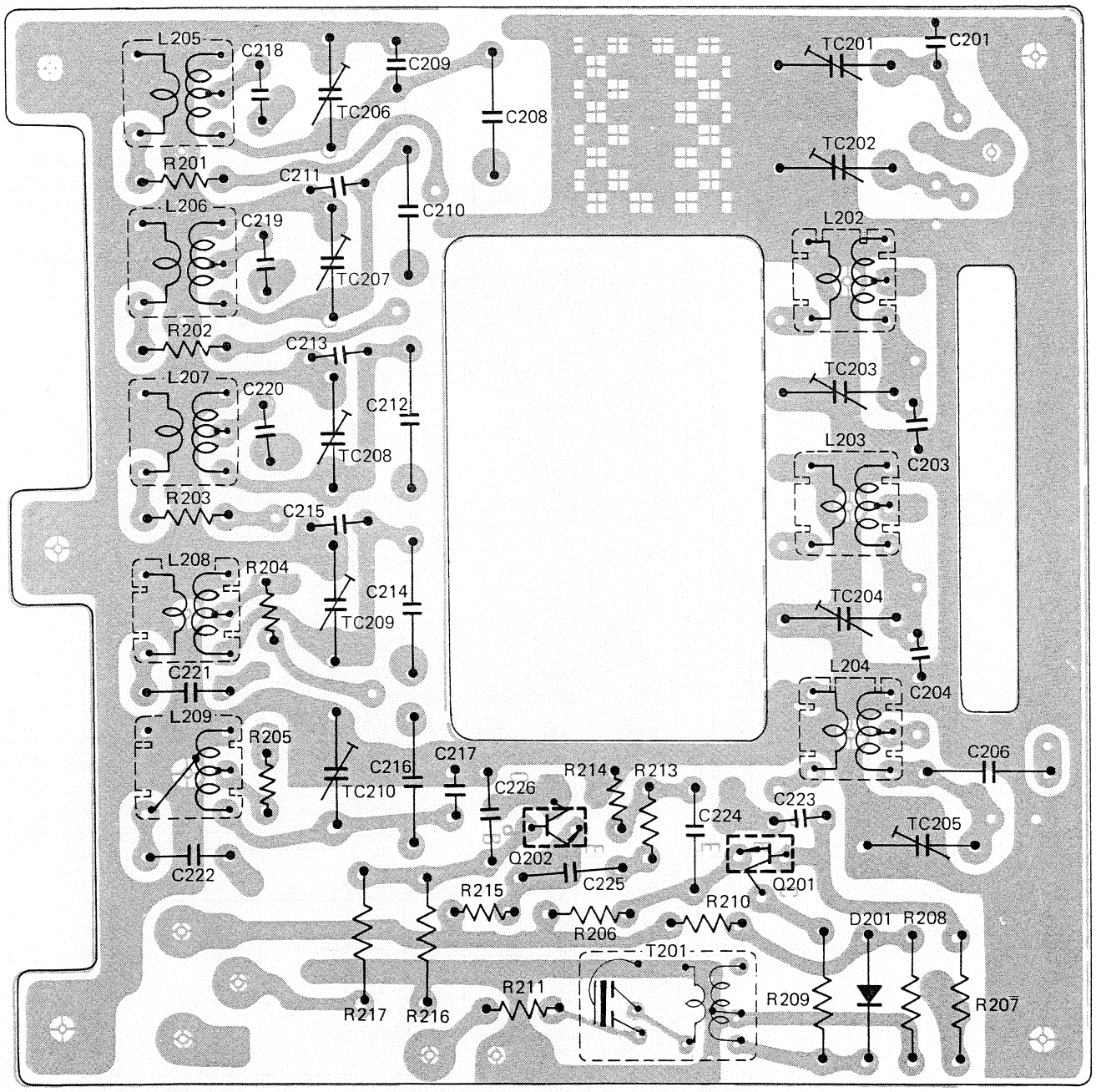


TOP VIEW OF P.C. BOARD (IF and AUDIO)

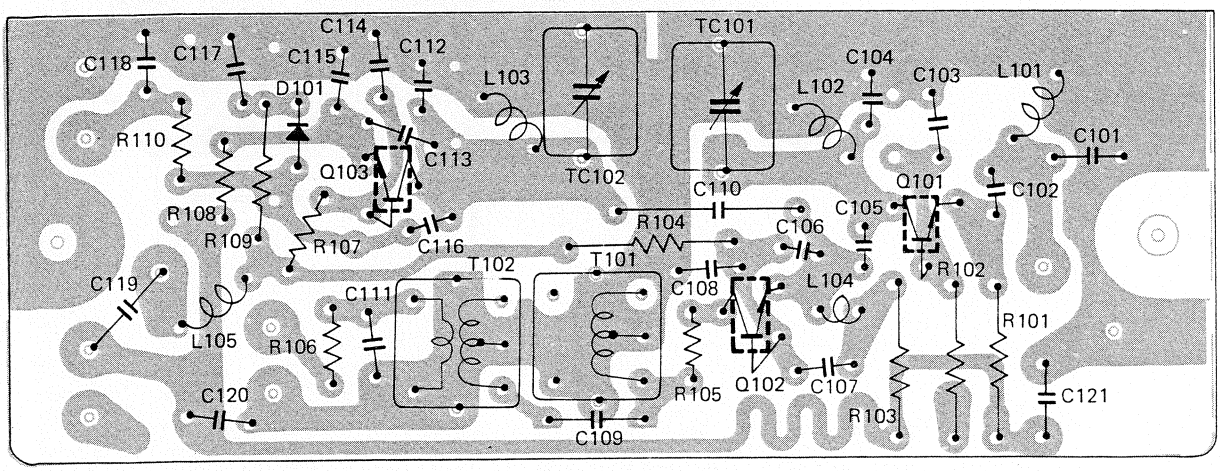


BOTTOM VIEW OF P.C. BOARD.

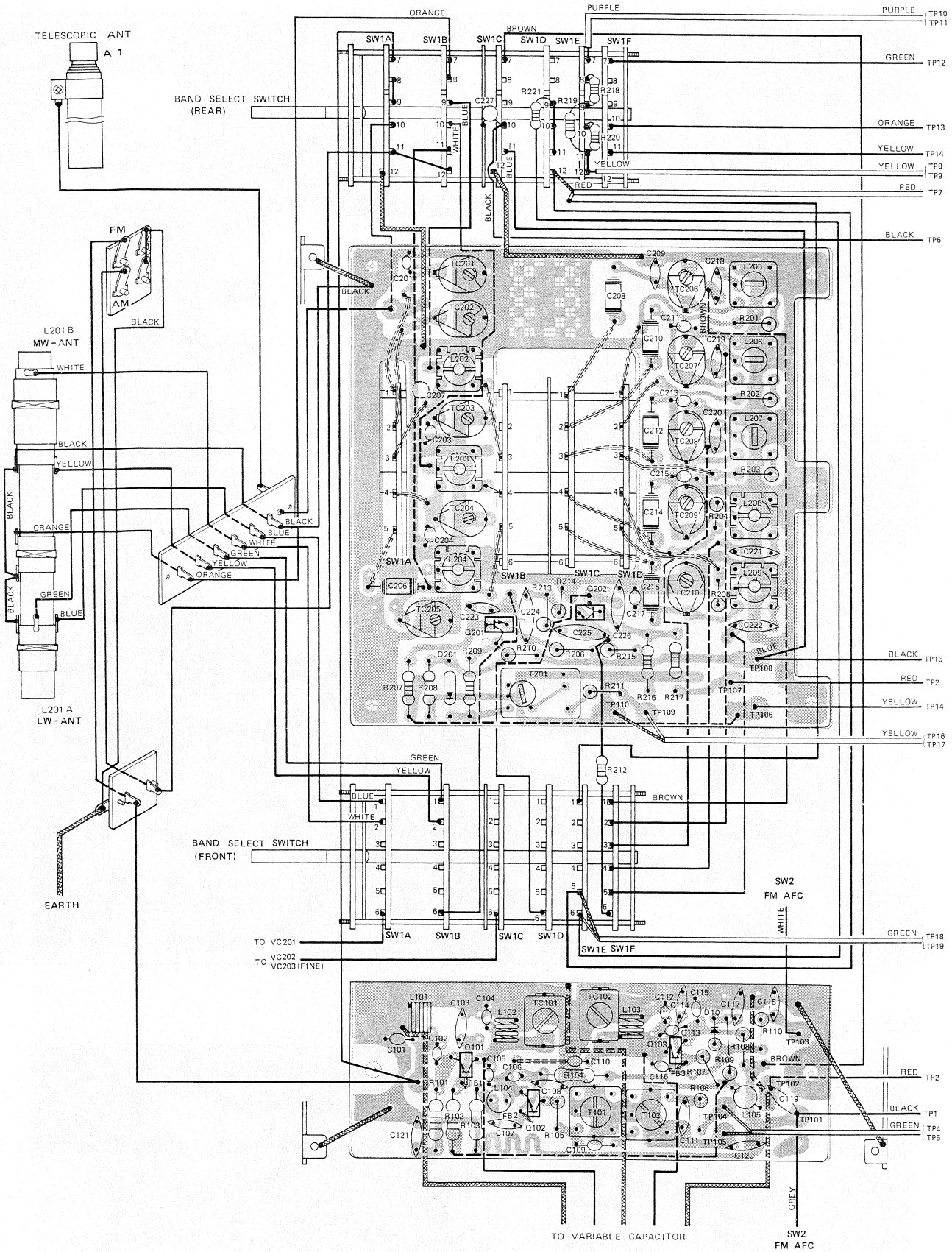
AM TUNER



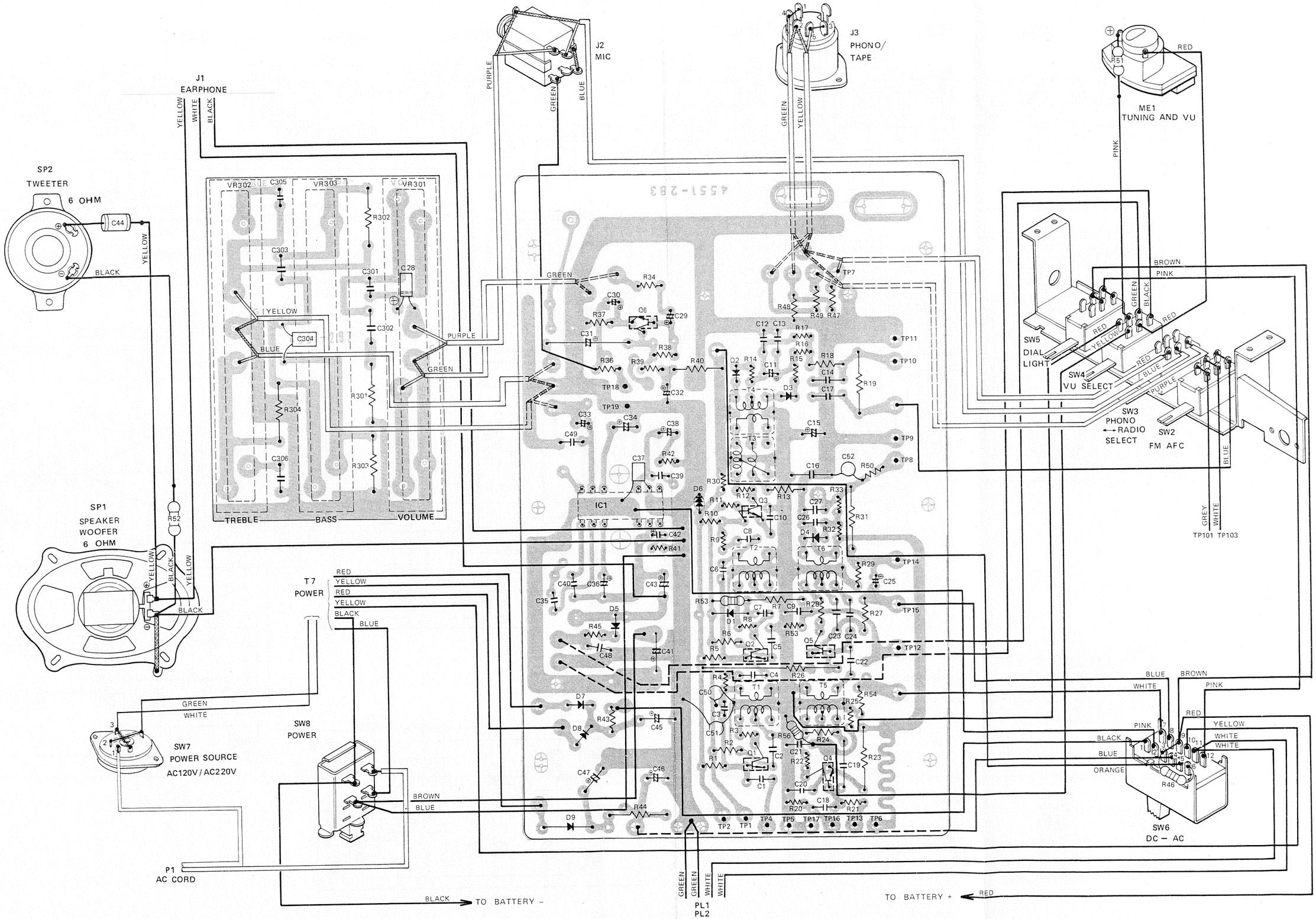
FM TUNER



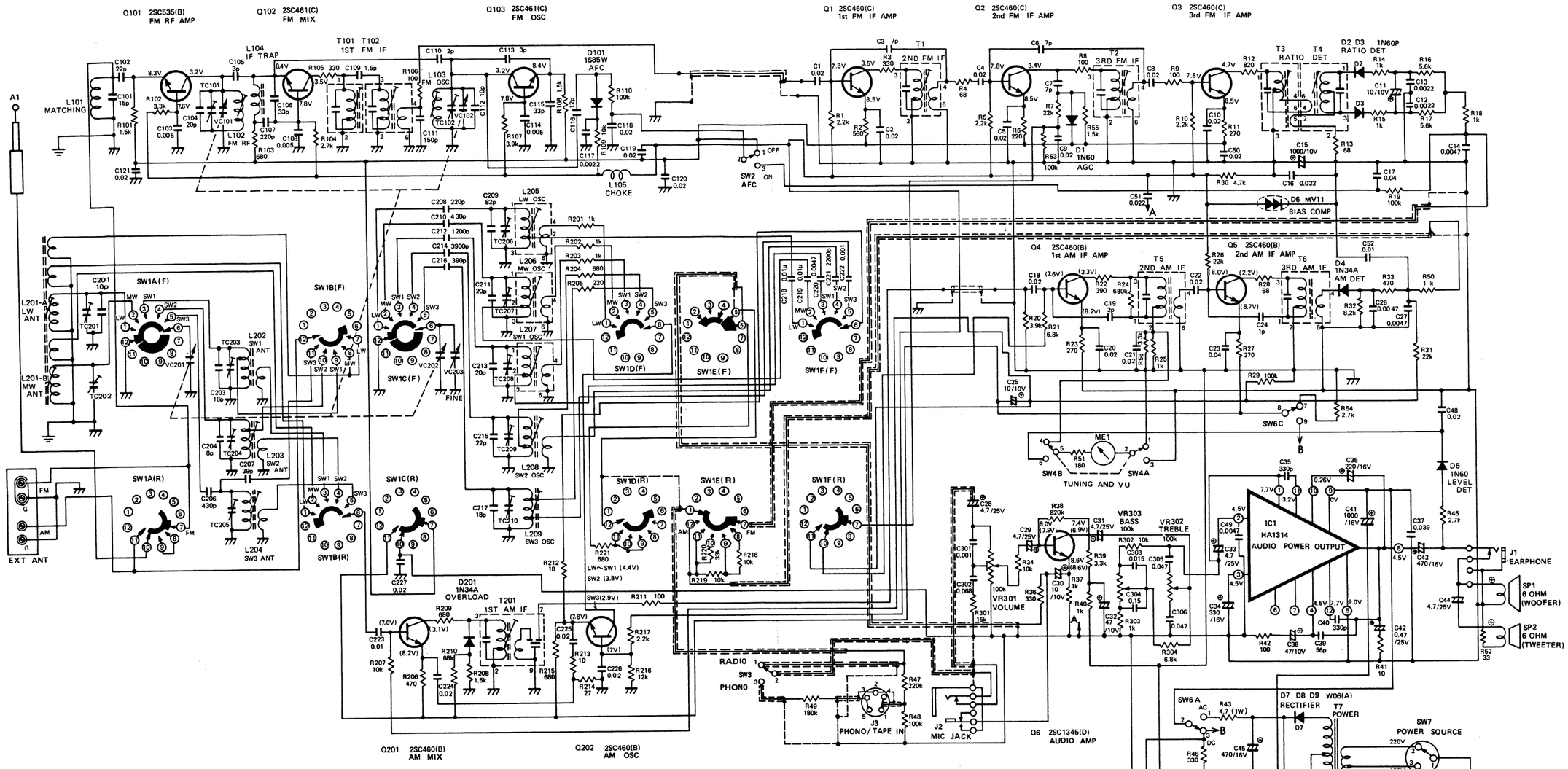
AM AND FM TUNER WIRING DIAGRAM



IF/AUDIO AND CONTROL WIRING DIAGRAM

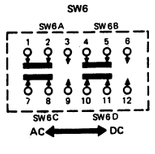


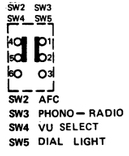
SCHEMATIC DIAGRAM

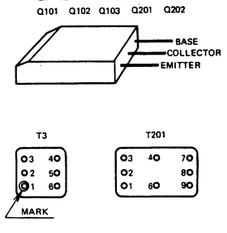


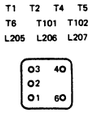
NOTES

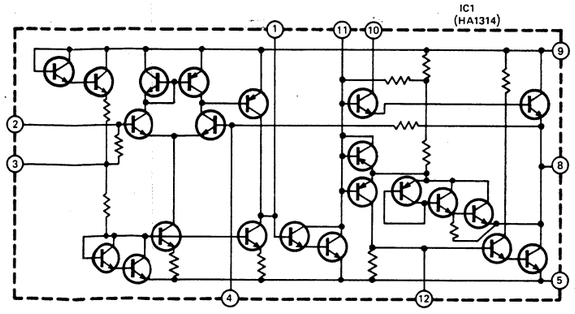
1. ALL RESISTANCES ARE ±5%, ¼W, UNLESS OTHERWISE NOTED, VALUES ARE IN OHMS. K = 1000, M = 1000K
2. ALL CAPACITANCES VALUES ARE IN MF UNLESS OTHERWISE NOTED. P = MMF
3. BAND SELECTOR SWITCH (SW1) IS IN FM POSITION.
4. VOLTAGE READINGS TO COMMON GROUND (–) ARE MEASURED WITH V.T.V.M. UNDER NO SIGNAL.
5. VOLTAGE MARKED WITH ( ) ARE MEASURED IN AM POSITION.











PARTS LIST

FM/AM IF AND AUDIO

REF. NO.	PART NO.	DESCRIPTION
	RESISTORS	
	(All resistors, ¼W, ±5% Carbon unless otherwise noted)	
R1,5,10	5154-222511	2.2 K ohm
R2	5154-561511	560 ohm
R3,36	5154-331511	330 ohm
R4,13,28	5154-680511	68 ohm
R6	5154-221511	220 ohm
R7,26,31	5134-223511	22 K ohm
R8,9,42	5154-101511	100 ohm
R11,27	5154-271511	270 ohm
R12	5154-821511	820 ohm
R14,15,18, 25,37	5154-102511	1 K ohm
R16,17	5154-562511	5.6 K ohm
R19,48	5134-104511	100 K ohm
R20	5154-392511	3.9 K ohm
R21	5154-682511	6.8 K ohm
R22	5154-391511	390 ohm
R23	5134-271511	270 ohm
R24	5134-684511	680 K ohm
R29,53	5154-104511	100 K ohm
R30	5154-472511	4.7 K ohm
R32	5154-822511	8.2 K ohm
R33,44	5134-471511	470 ohm
R34	5154-103511	10 K ohm
R38	5154-824511	820 K ohm
R39	5154-332511	3.3K ohm
R40,50	5134-102511	1 K ohm
R41	5154-100511	10 ohm
R43	5136-4R7612	4.7 ohm (1W)
R45,54	5154-272511	2.7 K ohm
R46	5134-331511	330 ohm
R47	5154-224511	220 K ohm
R49	5154-184511	180 K ohm
R51	5134-181511	180 ohm
R52	5134-330511	33 ohm
R55	5134-152511	1.5 K ohm
R56	5134-332511	3.3 K ohm
	CAPACITORS	
C1,2,4,5,8, 9,10,18, 20,21,22, 48,50	5361-203093	0.02MF +100% -0% 25V Ceramic
C3,6,7	5361-070092	7PF ±0.5PF 50V Ceramic
C11,25,30	5345-1060212	10MF +50% -10% 10V Electrolytic
C12,13	5362-222093	0.0022MF ±20% 50V Ceramic
C14,26,27, 49	5362-472093	0.0047MF ±20% 50V Ceramic
C15	5345-1080212	1000MF +50% -10% 10V Electrolytic
C16,51	5362-223093	0.022MF ±20% 50V Ceramic
C17,23	5361-403093	0.04MF +100% -0% 25V Ceramic
C19	5361-020092	2PF ±0.5PF 50V Ceramic
C24	5361-010092	1PF ±0.5PF 50V Ceramic
C28,29,33	5345-4750214	4.7MF +50% -0% 25V Electrolytic
C31	5345-4750219	4.7MF +100% -10% 25V Electrolytic
C32,38	5345-4760212	47MF +50% -0% 10V Electrolytic
C34	5345-3370113	330MF +100% -10% 16V Electrolytic
C35,40	5362-331093	330PF ±20% 50V Ceramic
C36	5345-2270213	220MF + 50% -10% 16V Electrolytic
C37	5354-393061	0.039MF ±20% 50V Mylar
C39	5361-560092	56PF ±10% 50V Ceramic
C41	5345-1080213	1000MF +50% -10% 16V Electrolytic
C42	5346-474091	0.47MF ±20% 25V Al. Solid
C43,45,47	5345-4770213	470MF +50% -10% 16V Electrolytic
C44	5342-475011	4.7MF ±20% 25V Electrolytic (non-polarized)
C46	5345-3370211	330MF +50% -10% 6.3V Electrolytic
C52	5362-103093	0.01MF ±20% 50V Ceramic
	SEMICONDUCTORS	
Q1,2,3	5613-460(C)	Transistor, 1st, 2nd and 3rd FM IF Amp.
Q4,5	5613-460(B)	Transistor, 1st and 2nd AM IF Amp.
Q6	5613-1345(D)	Transistor, Audio Amp.
D1	5631-1N60	Diode, AGC
D2,3	5631-1N60P	Diode, Ratio Detector
D4	5631-1N34A	Diode, AM Detector
D5	5631-1N60	Diode, Level Detector
D6	5641-MV11	Varistor, Bias Compensation
D7,8,9	5632-W06A	Diode, Rectifier (0.75A)
IC1	5652-HA1314	Integrated Circuit, Audio Power Output (HA1314)
	TRANSFORMERS	
T1,2	5563-0063	Transformer, 2nd and 3rd FM IF
T3	5573-0085D	Transformer, Ratio Det (Primary)
T4	5573-0055E	Transformer, Ratio Det (Secondary)
T5	5553-0051	Transformer, 2nd AM IF
T6	5553-0301	Transformer, 3rd AM IF
T7	5584-00156	Transformer, Power

FM AND AM TUNER

REF. NO.	PART NO.	DESCRIPTION
	RESISTORS	
	(All resistors, ¼W, ±5% Carbon unless otherwise noted)	
R101,208	5134-152511	1.5 K ohm
R102	5134-332511	3.3 K ohm
R103,209, 221	5134-681511	680 ohm
R104	5134-272511	2.7 K ohm
R105	5154-331511	330 ohm
R106,211	5154-101511	100 ohm
R107	5154-392511	3.9 K ohm
R108	5154-152511	1.5 K ohm
R109	5154-103511	10 K ohm
R110	5154-104511	100 K ohm
R201,202, 203	5154-102511	1 K ohm
R204,215	5154-681511	680 ohm
R205	5154-221511	220 ohm
R206	5154-471511	470 ohm
R207,218, 219	5134-103511	10 K ohm
R210	5154-683511	68 K ohm
R212	5134-180511	18 ohm
R213	5154-100511	10 ohm
R214	5154-270511	27 ohm
R216	5134-123511	12 K ohm
R217	5134-222511	2.2 K ohm
R220	5134-333511	33 K ohm

REF. NO.	PART NO.	DESCRIPTION
	CAPACITORS	
C101	5361-150092	15PF ±10% 50V Ceramic
C102,215	5361-220092	22PF ±10% 50V Ceramic
C103,108, 114	5361-502093	0.005MF +100% -0% 25V Ceramic
C104,211, 213	5361-200092	20PF ±10% 50V Ceramic
C105,113	5361-030092	3PF ±0.5PF 50V Ceramic
C106,115	5361-330092	33PF ±10% 50V Ceramic
C107	5362-221093	220PF ±20% 50V Ceramic
C109	5361-1R5092	1.5PF ±0.25PF 50V Ceramic
C110	5361-020092	2PF ±0.5PF 50V Ceramic
C111	5361-151092	150PF ±10% 50V Ceramic
C112,201	5361-100092	10PF ±10% 50V Ceramic
C116	5361-120092	12PF ±10% 50V Ceramic
C117	5361-222093	0.0022MF +100% -0% 25V Ceramic
C118,119, 120,121, 227	5361-203093	0.02MF +100% -0% 25V Ceramic
C203,217	5361-180092	18PF ±10% 50V Ceramic
C204	5361-080092	8PF ±0.5PF 50V Ceramic
C206,210	5355-431561	430PF ±5% 50V Stylor
C207	5361-390092	39PF ±10% 50V Ceramic
C208	5355-221561	220PF ±5% 50V Stylor
C209	5361-820092	82PF ±10% 50V Ceramic
C212	5355-122561	1200PF ±5% 50V Stylor
C214	5355-392561	3900PF ±5% 50V Stylor
C216	5355-391561	390PF ±5% 50V Stylor
C218,219	5362-103093	0.01MF ±20% 50V Ceramic
C220	5362-472093	0.0047MF ±20% 50V Ceramic
C221	5362-222093	0.0022MF ±20% 50V Ceramic
C222	5362-102093	0.001MF ±20% 50V Ceramic
C223	5361-103093	0.01MF +100% -0% 25V Ceramic
C224,225, 226	5362-203093	0.02MF ±20% 50V Ceramic

REF. NO.	PART NO.	DESCRIPTION
VC101,102, 201,202	5314-016	Variable Capacitor
VC203	5321-039	Variable Capacitor, Fine Control
TC101,102	5371-49	Trimmer, FM RF, FM OSC
TC201	5371-26	Trimmer, LW Ant.
TC202,203	5371-27	Trimmer, MW and SW1 Ant.
TC204,205	5371-26	Trimmer, SW2 and SW3 Ant.
TC206	5371-26	Trimmer, LW OSC
TC207,208	5371-27	Trimmer, MW and SW1 OSC
TC209,210	5371-26	Trimmer, SW2 and SW3 OSC
	SEMICONDUCTORS	
Q101	5613-535(B)	Transistor, FM RF Amp.
Q102,103	5613-461(C)	Transistor, FM Mixer, FM OSC
Q201,202	5613-460(B)	Transistor, AM Mixer, AM OSC
D101	5633-1S85W	Diode, FM AFC
D201	5631-1N34A	Diode, Overload
	COILS AND TRANSFORMERS	
L101	5991-0115	Coil, FM Matching
L102	5991-0185	Coil, FM RF
L103	5991-0035	Coil, FM OSC
L104,105	5995-0056	Coil, IF Trap, Choke
L201A,B	5913-32	LW/MW Ferrite bar Antenna
L202	5943-0058	Coil, SW1 Ant.
L203	5943-0068	Coil, SW2 Ant.
L204	5943-0078	Coil, SW3 Ant.
L205	5923-0523	Coil, LW OSC
L206	5923-0533	Coil, MW OSC
L207	5923-0543	Coil, SW1 OSC
L208	5923-00914	Coil, SW2 OSC
L209	5923-01014	Coil, SW3 OSC
T101,102	5563-0063	Transformer, 1st FM IF
T201	5672-0032	Ceramic Filter, 1st AM IF

CONTROL

REF. NO.	PART NO.	DESCRIPTION
	RESISTORS	
	(All resistors ¼W, ±5% Carbon unless otherwise noted)	
R301	5134-153511	15 K ohm
R302	5134-103511	10 K ohm
R303	5134-102511	1 K ohm
R304	5134-682511	6.8 K ohm
VR301	5223-104026	100 K ohm Volume Control
V302,303	5223-104016	100 K ohm Treble and Bass Control

REF. NO.	PART NO.	DESCRIPTION
	CAPACITORS	
C301	5354-102061	0.001MF ±20% 50V Mylar
C302	5354-683061	0.068MF ±20% 50V Mylar
C303	5354-153061	0.015MF ±20% 50V Mylar
C304	5354-154061	0.15MF ±20% 50V Mylar
C305	5354-472061	0.0047MF ±20% 50V Mylar
C306	5354-473061	0.047MF ±20% 50V Mylar

MISCELLANEOUS

REF. NO.	PART NO.	DESCRIPTION
	A311-XF900	Cabinet Ass'y
	D551-XF900-A	P.C. Board Ass'y (IF and AUDIO)
	D551-XF900-VR	P.C. Board Ass'y (Control)
	A352-XF900-C	Knob Ass'y, Tuning
	A352-XF900-F	Knob Ass'y, Fine Tuning
	A352-XF900-RT	Knob Ass'y, Volume, Treble, Bass
	A353-XF900-DL	Push button Ass'y, D. Light, VU, Phono., AFC
	A353-XF900-PW	Push button Ass'y, Power
	A352-XF900-BS	Push button Ass'y, Band Select
A1	1392-130014	Telescopic Antenna
	1321-331	Battery case
SP1	5812-C180021	Speaker, 6 ohm (120X190mm) (Woofer)
SP2	5811-C057019	Speaker, 6 ohm (50mm) (Tweeter)
SW1A-F	4411-606021	Switch, Band Select.
SW2	4431-0102410	Switch, FM AFC
SW3	4431-0102410	Switch, Phono.↔Radio Select
SW4	4431-0102410	Switch, VU Select.
SW5	4431-0102410	Switch, D. Light
SW6	4421-04238	Switch, AC ↔DC Select.
SW7	4411-104412	Switch,AC120V↔AC220V Select

REF. NO.	PART NO.	DESCRIPTION
SW8	4431-0102118	Switch, Power
ME1	4323-0610	Meter, Tuning / VU
PL1	5731-0900720	Lamp, Dial Illuminator
PL2	5731-0900620	Lamp, Dial Illuminator
J1	4451-0019	Jack, Earphone
J2	4451-0033	Jack, Microphone
J3	4474-4	Jack, (DIN 5P) Phono. / Tape IN
FB1,2,3	5597-2	Ferrite Bead
P1	4161-4125	AC. Line Cord
	5821-C16038	Magnetic Earphone
	5892-C029	Dynamic Microphone (Option)
	2634-101	Dial Pointer (Tuning)
	2631-01123	Pointer, Band Indicator
	2631-01145	Pointer, Fine Tuning
	2602-040232	Tuning Shaft
	2602-040219	Tuning Shaft (Fine)
	2611-0518	Drum, Fine Tuning
	2611-0132	Drum, Tuning
	2611-0133	Drum, Band Indicator
	2612-5621	Dual Pulley
	2612-5221	Pulley (Large)
	2612-5223	Pulley (Small)